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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/029,961	12/31/2001	Jai-young Kim	030681-349	5416

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EXAMINER

FALASCO, LOUIS V

ART UNIT	PAPER NUMBER
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1773

DATE MAILED: 07/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/029,961

Applicant(s)

KIM, JAI-YOUNG

Examiner

Louis Falasco

Art Unit

1773

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/15/04&03/24/05</u> . | 6) <input type="checkbox"/> Other: _____ |

PAPERS RECEIVED

This application is acknowledged as a Request for Continued Examination.

The Information Disclosure Statements filed 11/15/04 & 03/24/05 are acknowledged.

CLAIMS

The claims are: 1, and 3 to 11. All claims are under consideration.

In view of the Information Disclosure Statement filed 03/24/05 and discovery of new art the allowance of all claims made in the Notice of Allowability mailed 11/02/04 has been vacated by the examiner.

DETAILED ACTION

Statutory basis

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Rejections

1. Claims 1, 3 to 5, 7 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hirota et al** (JA 11185237) and *Ullmann's Encyclopedia of Industrial Chemistry* "Magnetic Quantities and Their Measurement" taken with **Honda et al**

(Extremely High Linear Density Recording by Perpendicular Magnetization - IEEE Trans. On Magnetics vol. 32 No. 5 Sept. 1996 pgs 3804-3806).

Hirota et al teaches a perpendicular recording disk including an under layer between a substrate and perpendicular magnetic recording layer - see structure of Drawing 2 or 14 illustrating the convention of a perpendicular recording disc with an intermediate soft layer (layer 16 or 58 of Drawings 1, 2 or 14) and the magnetic perpendicular layer constituents (Detailed Description paragraph 13). The claims also require the perpendicular recording layer of the recording disk have a *thickness in a range where the ratio of perpendicular coercivity to maximum perpendicular coercivity decreases with reduced thickness* of the perpendicular recording layer. While the perpendicular recording layer range taught in **Hirota et al** is within the thickness range disclosed for occurrence of the result of *thickness in a range where the ratio of perpendicular coercivity to maximum perpendicular coercivity decreases with reduced thickness* in the claimed properties. Further, **Hirota et al** points out the anisotropy, which one of ordinary skill would appreciate gives rise to coercivity, as evident from *Ullmann's Encyclopedia of Industrial Chemistry* "Magnetic Quantities and Their Measurement" page 3 second paragraph, is dependent on the thickness of this layer - see **Hirota et al** 'EXAMPLE' paragraph [0018], this is also illustrated in Drawing 12 showing coercivity in perpendicular magnetic films of 20nm to 150 nm thickness corresponding to applicants preferred thickness for coercivity - to - maximum perpendicular coercivity decreasing with the thickness of the perpendicular recording layer, explained at **Hirota et al**

'EXAMPLE' paragraph [0031], though **Hirotaka et al** does not explicitly set forth that *coercivity - to - maximum perpendicular coercivity decreases with reduced thickness*. However, **Honda et al** shows the relationship of thickness to coercivity and as evident from the illustration of magnetic perpendicular recording layer thickness δ and it's variation with output E_p (recording density response) at Fig. 1 and H_c with E_p at Fig 2 graphical presentation recording density responses for thicknesses and the Fig. 4 thickness δ dependence on out put (H_c) included in applicants specific thickness range shows *coercivity - to - maximum perpendicular coercivity decreases with reduced thickness* this is further evident from Table I of **Honda et al** employing the ranger of thickness for this preferred by applicants - as in instant claim 10.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to adopt the recording density responses for thicknesses range for *coercivity - to - maximum perpendicular coercivity decreases with reduced thickness* of **Honda et al** for the perpendicular recording layer in the recording media of **Hirotaka et al** for purpose of optimizing the thickness of the perpendicular layer. One skilled in the art would have been motivated to adopt the **Honda et al** teaching with the expectation of maximizing the performance of the media for high density recording (see Introduction page 3804 in **Honda et al**).

In considering the equation of claim 4, though the art does not have this equation as a relationship, the claiming of an unidentified characteristic that appears inherently present does not necessarily make a claim to that character patentable.

Where claimed and prior art products have been shown to be substantially identical in structure or composition and a case of prima facie obviousness has been established the burden of proof shifts to applicant to show prior art products do not necessarily nor inherently possess the characteristic of the claimed product - see In re Best, 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977).

2. Claims 4 and 8 to 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hirotaka et al** and *Ullmann's Encyclopedia* with **Honda et al** IEEE Trans. On Magnetics as applied to claims 1, 3 to 5, 7 and 11 above, and further in view of **Suzuki et al** (US 6641934) or **Hikosaka et al** (US 5942342).

Hirotaka et al and *Ullmann's Encyclopedia* with **Honda et al** do not teach selection of the soft magnetic layer materials of these claims. However **Suzuki et al** teaches selection of the soft magnetic layer materials of these claims including a perpendicular magnetic recording disk having an under layer (item 40) an intermediate soft layer between the underlayer (item 30) and perpendicular recording layer (item 11). **Suzuki et al** spells out the thickness of the layers may be determined as desired and also disclosed within applicants range (col. 4 lns 27, 28 and materials of col. 4 lns 50, 51) and the soft magnetic layer and the perpendicular magnetic layer form closed magnetic loops is a property that the **Suzuki et al** encompasses, as they disclose the same structure materials and thickness as applicant.

Hikosaka et al teaches the teaches selection of the soft and perpendicular magnetic layer materials of these claims including a perpendicular magnetic recording disk having an under layer (col. 3 ln 4) an intermediate soft layer between the underlayer (Fig 5 upper soft magnetic layer 12) and perpendicular recording layer (item 1). While **Hikosaka et al** doesn't explicitly require a thickness in the range where the ratio of perpendicular coercivity - to - maximum perpendicular coercivity decreases with reduced thickness of the perpendicular magnetic recording layer nor that the soft magnetic layer and the perpendicular magnetic layer form closed magnetic loops **Hikosaka et al** spells out the thickness of the layers may be determined as desired and this thickness is disclosed within applicants range (col. 9 lns 53, col. 10 ln25, 26). The perpendicular coercivity - to - maximum perpendicular coercivity and the soft magnetic layer and the perpendicular magnetic layer form closed magnetic loops is merely an unidentified property taught by the primary references that the **Hikosaka et al** appears to encompass, since they disclose the same structure materials and thickness as applicant and compositions (col. 7 lns 5-8, 23 col. 9 lns 14, 15).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to adopt selection of the soft and perpendicular magnetic layer materials of these claims of **Suzuki et al** or **Hikosaka et al** in the recording media of the primary references for purpose of reducing noise improving the anisotropy of the media (**Suzuki et al** col. 2 lns 33-36 or **Hikosaka et al** col. 3 ln 65 - col. 4 ln 6). One

skilled in the art would have been motivated to adopt **Suzuki et al** or **Hikosaka et al** with the expectation of improving the signal out put of the media.

REFERENCES

Translations included by the examiner with this action correspond to patent documents cited by applicants in their Information Disclosure Statement.

- A line has been drawn through the IDS Non-Patent document of "OFFICE ACTION" issued by JPO since this has not been received.

Suzuki et al (US 6641934) and **Hikosaka et al** (US 5942342) have omitted from the attached PTOL 892 form since both have been cited in a previous Office Action mailed 01/29/04.

CONCLUSION

The claims are 1 and 3 to 11.

- No claim has been allowed.
- Information Disclosure Statement has been received.


INQUIRES

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Louis Falasco, PhD whose telephone number is (571)272-1507. The examiner can normally be reached on M-F 10:30 - 7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol D. Chaney, PhD can be reached at (571)272-1284. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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04/05


STEVAN A. RESAN
PRIMARY EXAMINER